REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing claim revisions and these comments.

I. Status of Claims

Claims 1-4, 8, 9, 16, 17, 18, 20 and 21 are amended. Exemplary support for the amendment to claim 1 can be found on page 6, lines 11-13. Claims 2-4 are amended to comport with the amendments to claim 1. Exemplary support for the amendments to claim 16 can be found on page 6, line 8. Claim 17 is amended to comport the language with claim 16 in view of the change in dependency. Claims 8, 9, 18, 20 and 21 are amended to conform them to U.S. practice and/or to correct typographical errors. No new matter is added.

Claim 22 is added. Exemplary support can be found in claim 9. Again, no new matter is added.

Upon entry of this response, claims 1-6, 8, 9, and 16-22 will be pending and subject to examination on the merits, with claims 7 and 10-15 withdrawn.

II. Claims Rejections - 35 U.S.C. § 112, Second Paragraph

Claims 16 and 17 stand rejected for alleged indefiniteness. In particular, the examiner contends that a number of recited terms and phrases recited render these claims unclear.

Without acquiescing to the propriety of the rejection, applicants have revised claims 16 and 17 such that they no longer recite the terms and phrases in question. Thus, the rejection is mooted and should be withdrawn.

III. Claims Rejections – 35 U.S.C. § 103

Claims 1-6, 8-9 and 16-21 stand rejected for alleged obviousness over Marshall *et al.*, U.S. Patent No. 4,678,673, in view of Holley *et al.*, U.S. Patent No. 7,074,449. According to the examiner, Marshall "does not specifically mention lupine seeds," and Holley is cited to remedy this deficiency. Applicants respectfully traverse this ground of rejection.

The rejection is premised on the faulty factual claim that "lupine seeds are inherently an oilseed."[1] A skilled worker would not consider "lupine seeds" to be an oilseed, as disclosed by Marshall.

The expression "oilseed" refers to crops having seeds that contain sufficient amounts of oil so that the oil can be recovered and processed. (Exhibit A). The major world sources of edible seed oils are soy beans, sunflowers, rapeseed, cotton, and peanuts. (*Id*). In addition, seed oils from flax (linseed) and castor beans are recovered. (*Id*). Flax and castor oils, however, are not edible and are used for industrial purposes. (*Id*).

Lupine seed is not an oilseed but rather a legume. WEBSTER'S NEW UNIVERSAL UNABRIDGED DICTIONARY, Barnes & Noble Publishing, Inc. (2003) (Exhibit B). A legume is a plant in the family *fabacea* or a fruit of these specific plants. *See* Exhibits C & D. Thus, "legume" is a botanical characterization. Legumes include crops that are oil-rich and, therefore, regarded as an "oilseed crops," namely soy beans and peanuts, but not all legumes are oilseed crops.

The German Wikipedia excerpt for legumes, which is attached as Exhibit E, (a comparable one in English was not available) indicates the fat content of a number of legumes. Soy beans and peanuts, which are oilseed crops, contain 19% fat and 15% fat, respectively, but lupines contain only 4% fat.

[1] Even if lupine was an "oilseed," it is of no legal consequence. A genus does not necessarily anticipate or render obvious a species, and the examiner has not made the factual determinations necessary to support such a conclusion. *See, e.g.*, MPEP §§ 2131.02 & 2144.08.

Thus, Marshall's oilseed preparations do not teach or suggest the use of lupine seeds. Lupine is simply not considered an oilseed by those skilled in the art.

Marshall also does not suggest a protein preparation comprising "L-lactic acid" or a predominant amount of L-lactic acid. "[L]evorotatory L-lactic acid is known to be particularly valuable nutritionally, and therefore it is preferred that a large part, or all, of the lactic acid is present as L-lactic acid." Spec at page 6, line 13. Marshall merely discloses that a small amount of lactic acid was detected in the dried, fermented, full-fat soy. Marshall at 8:34-48. Marshall, however, makes no mention of the optical nature of the detected lactic acid, and it is pure speculation whether the lactic acid was "L-lactic acid" or predominantly L-lactic acid. Moreover, Marshall's lactic acid was probably not derived from soy-sugar breakdown, but "possibly from endogenous substrate utilization by the cells, after transfer to the soy medium." Marshall at 8:45-48. Accordingly, Marshall does not suggest providing a product containing the nutritionally valuable L-lactic acid in combination with diacetyl, and one of ordinary skill in the art would not have been successful in obtaining such a product using Marshall's fermentation methods.

Marshall states that "fermentation time is an important feature of the methods" and that "the fermentation should be carried out in less than 8 hours," preferably 3-6 hours. Marshall at 5:14-16. Beyond eight hours, contaminant levels in the slurry would become significant, thus adversely affecting final product flavor and texture. Marshall at 5:14-20. In contrast to this teaching, the fermentation time disclosed in the present application is rather long, resulting in protein preparations comprising a considerable amount of L-lactic acid. For example, the fermentation time for examples 2 to 5 was about 24 hours, and the protein preparations contained between 13.9 and 17.5 g/L L-lactic acid. Marshall's methods would not necessarily result in the recited amounts of lactic acid, therefore, and nothing in Marshall suggests increasing the amounts of L-lactic acid.

Marshall states that the full-fat aqueous oilseed slurry contains between 9-18% (w/v) of oilseed component to obtain a product that is not negatively affected by an off-flavor. Marshall at claim 1. Because the full-fat oilseed slurry must have the original distribution of

proteins, fats, and carbohydrates, the full-fat oilseed slurry would contain about 37% protein, based on the dry weight.

The claimed composition comprises "at least 60% protein from a plant source," a relatively high protein amount. In contrast to the findings of Marshall with respect to a soy slurry, fermentation of a slurry obtained from lupine seed and comprising such a high protein content will result in a fermented product having a milk-product-like aroma and a considerable amount of L-lactic acid. At the same time, the fermented production will have no or almost no "beany" off-odor. *See* Spec. at paragraph bridging pages 7 and 8.

Thus, Marshall teaches fermentation of an oilseed, for example soy bean, while the claimed invention uses lupine seed, which is a typical proteinacious seed having a content of only about 5% fat, relative to the dry solids of the lupine seed. Marshall's fermentation was done with a *lactobacillus*, namely *L. casei ssp. rhannosus*, which seems to be no *lactobacillus* at all because it does not produce lactic acid. Moreover, fermentation is made with broths having a low protein concentration. This is common in the art for soy bean because it is known that only a low concentration of protein in the broth will avoid the production of off-flavor. Finally, Marshall must avoid long fermentation times, which will negatively affect the production of lactic acid, if any. Therefore, Marshall discloses a method for the preparation of a product resulting in a product (a) made from sources other than those recited by the claims and (b) lacking the desired L-lactic acid.

Consequently, it was not obvious for one of ordinary skill in the art to arrive at the present invention, even if the Holley patent teaches processing alkaloid, oil, and protein preparations from protein-containing lupine seeds. Because Holley does not teach any fermentation at all, it would not be obvious for one of ordinary skill in the art that Holley's protein level in the dry solids of more than 70% would be helpful in the production of a product as claimed. Indeed, Marshall teaches away from using such high protein content.

For at least these reasons, applicants respectfully request reconsideration and withdrawal of this ground of rejection.

CONCLUSION

Applicants submit that the present application is in condition for allowance, and they request and early indication to this effect. Examiner Caldwell is invited to contact the undersigned directly, should she feel that any issue warrants further consideration.

Respectfully submitted,

Date October 19, 2009

By S. A. Bent

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Attorney for Applicant
Registration No. 29,768

The Commissioner is hereby authorized to charge any additional fees, which may be required under 37 CFR §§ 1.16-1.17, and to credit any overpayment to Deposit Account No. 19-0741. Should no proper payment accompany this response, then the Commissioner is authorized to charge the unpaid amount to the same deposit account. If any extension is needed for timely acceptance of submitted papers, then Applicant hereby petitions for such extension under 37 CFR §1.136 and authorizes payment of the relevant fee(s) from the deposit account.

EXHIBIT A

Oilseed Crops

ARTICLE CONTENTS | *Links to Other Sites*

Oilseed Crops are grown primarily for the oil contained in the seeds. The oil content of small grains (eg, wheat) is only 1-2%; that of oilseeds ranges from about 20% for SOYBEANS to over 40% for SUNFLOWERS and rapeseed (CANOLA). The major world sources of edible seed oils are soybeans, sunflowers, rapeseed, cotton and peanuts. Seed oils from FLAX (linseed) and castor beans are used for industrial purposes. Edible fats and oils are similar in molecular structure; however, fats are solid at room temperature, while oils are liquid.

KEYWORDS
Oil Seed Crops

Fats and oils are essential nutrients, comprising about 40% of the calories in the diet of the average Canadian. Edible vegetable oils are used as salad or cooking oils, or may be solidified (by a process called hydrogenation) to make margarine and shortening. These products supplement or replace animal products (eg, butter, lard), supplies of which are inadequate to meet the needs of an increasing world population.

While there are many uses for industrial vegetable oils, total world production is only about 3% of that of edible oils. Industrial applications are based on the properties of particular fatty-acid components of these oils. For example, flaxseed oil, rich in the unsaturated fatty acid linolenic, is a drying oil and is used in protective coatings (eg, paints, varnishes). Vegetable oils are used in putty, printing inks, erasers, coating or core oils, greases, plastics, etc. The residue remaining after the oil has been extracted from oilseeds is an important source of nutrients for farm animals. Oilseed meals from soybeans, peanuts, rapeseed and flaxseed are rich in protein; mixed with other ingredients (eg, cereal grains), they provide nutritionally balanced feeds.

The major oilseeds grown in Canada are soybeans, sunflowers, canola and flax. In addition, experimental production of peanuts on a commercial scale began in 1981 in southwestern Ontario. Plant breeding experiments are underway at the Agriculture Canada RESEARCH STATION, Saskatoon, Saskatchewan, to develop an edible oil from mustard seed and a usable animal feed from the residue. The program involves reducing the content of 2 harmful substances, erucic acid and glucosinolate, which were formerly a problem in rapeseed oil.

Soybeans require a relatively long growing season (100-140 days) and warm temperatures; hence, Canadian production is concentrated in southwestern Ontario. Sunflowers will tolerate a somewhat shorter (100-120 days), cooler growing season; most Canadian production occurs in southern Manitoba. Flax and canola are adapted to the relatively short, cool growing season of the Prairie provinces and most production occurs in that area. The size of the area of adaptation and the development of varieties with improved quality have permitted canola to become the major edible oilseed crop in Canada.

EXHIBIT B

WEBSTER'S
NEW UNIVERSAL
UNABRIDGED
DICTIONARY

With definitions based on the
Random House Webster's Unabridged Dictionary, Second Edition

BARNES
&NOBLE
BOOKS
NEW YORK

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3 5 7 9 10 8 6 4

[1970–75]

year (def. 4a). [1585–95]

at), *adj.* **1.** Also, **lu•nat•ed.** crescent-*Anat.* the second bone from the thumb mal row of bones of the carpus. **3.** a microlithic artifact mounted in a haft to te tool, mostly Mesolithic in origin. *nātus* crescent-shaped. See LUNA, -ATE¹]

tik), *n.* **1.** an insane person. **2.** a tions and manner are marked by ex- or recklessness. **3.** *Law.* a person le- be of unsound mind and who therefore ble or responsible before the law. —*adj.* ted; crazy. **5.** characteristic or sugges- dly or recklessly foolish. **6.** designated e insane: *a lunatic asylum.* **7.** gaily or ad, frivolous, eccentric, etc.: *She has a that is quite engaging.* Also, **lu•nat•i•cal** r defs. 4, 5, 7). [1250–1300; ME *lunatik* < LL *lūnāticus* moonstruck. See LUNA, -ic-al-ly, *adv.*

, members on the periphery of any ical, social, or religious, who hold ex- al views. [1910–15, *Amer.*]

nā′shən), *n.* the period of time from to the next (about 29½ days); a lunar 400; ME *lunacyon* < ML *lūnātiōn-* (s. of NA, -ATION]

n. **1.** a light midday meal between inner; luncheon. **2.** any light meal or staurant or lunchroom: *Let's eat at the* **out to lunch,** *Slang.* not paying atten- to business; negligent: *You must have ish when you wrote that weird report.* nch: *We lunched quite late today.* —*v.t.* sh for: *They lunched us in regal fash-* short for LUNCHEON] —**lunch′er,** *n.*

sh′boks′), *n.* a small container, usually ic and with a handle, for carrying one's to school or work. Also called **lunch- et** (lunch′buk′it). [1860–65; LUNCH +]

er, **1.** a counter, as in a store or restau- meals and snacks are served or are sold **2.** a luncheonette. [1865–70]

chən), *n.* lunch, esp. a formal lunch with a meeting or other special occa- *luncheon.* [1570–80; dissimilated var. dial.), ME *none(s)chench* noon drink, OON + *schench,* OE *scenc* a drink, cup; ean to pour out, give drink; c. D, G nk′en•less, *adj.*

(lun′chə net′), *n.* a small restaurant here light meals are served. [1920–25, + -ETTE]

ot, any of various sausages or molded lly sliced and served cold, as in sand- ches for salads. [1940–45]

unch′hōōk′), *n. Slang.* **1.** Usually, ds. **2.** a light anchor for mooring a short time. [LUNCH + HOOK]

unch′mēt′), *n.* See **luncheon meat.**

h′pāl′), *n.* **1.** lunchbox. **2.** a worker's shape of a pail, originally for carrying 95; *Amer.*; LUNCH + PAIL]

nch′rōōm′, -rŏŏm′), *n.* **1.** a room, as light meals or snacks can be bought or ht from home may be eaten. **2.** a 15–25; LUNCH + ROOM]

nch′tīm′), *n.* a period set aside for eat- period of an hour or so, beginning during which lunch is commonly eaten. + TIME]

(lunch′wag′ən), *n.* a small bus, truck, outfitted for selling or for serving light s to the public. [1890–95; LUNCH +]

ē), *adj.*, **lunch•i•er, lunch•i•est.** *Slang.* witted. **2.** carefree or irresponsible. LUNCH (extracted from the idiom *out to* d, irresponsible) + -Y¹]

nd′bərg); *n.* **George A(ndrew),** 1895– logist and author.

′, (lun′dēz), a road near Niagara Canada: battle between the British and 814.

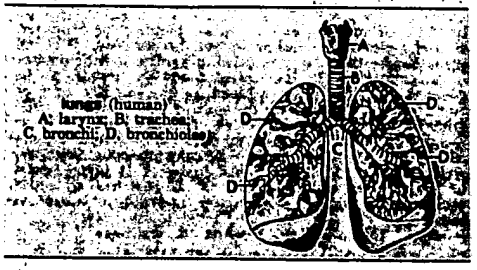
1. anything shaped like a crescent or a crescent-shaped figure bounded by two ther on a plane or a spherical surface. [*lūna* moon]

Falconry. a line for securing a hawk. E, var. of *loyn* < MF *loigne* LONGE]

(*used with a plural v.*) *Archaic.* fits of 15; < F, MF, pl. of *lune* caprice < ML cy, special use of L *lūna* moon; cf. G

not′), *n.* **1.** any of various objects or tline or semicircular outline or section. he plane of a wall) an area enframed by t. **3.** a painting, sculpture, or window rea. **4.** *Fort.* a work consisting of a sali- 24,700.

lung (lung), *n.* **1.** either of the two saclike respiratory organs in the thorax of humans and the higher vertebrates. **2.** an analogous organ in certain invertebrates, as arachnids or terrestrial gastropods. **3. at the top of one's lungs,** as loudly as possible; with full voice: *The baby cried at the top of his lungs.* [bef. 1000; ME *lungen,* OE; c. G *Lunge;* akin to LIGHT², LIGHTS] —**lunged** (lungd), *adj.*



lungs (human)
A, larynx; B, trachea; C, bronchi; D, bronchioles

lun•gan (lung′gən), *n.* longan.

lung′ book′. See **book lung.** [1880–85]

Lung•ch'i (*Chin.* lôông′chē′), *n. Wade-Giles.* Longxi.

lunge¹ (lunj), *n., v.,* **lunged, lung•ing.** —*n.* **1.** a sudden forward thrust, as with a sword or knife; stab. **2.** any sudden forward movement; plunge. —*v.i.* **3.** to make a lunge or thrust; move with a lunge. —*v.t.* **4.** to thrust (something) forward; cause to move with a lunge: *lunging his finger accusingly.* [1725–35; earlier *longe* for F *allonge* (n.; construed as a *longe*), *allonger* (v.) to lengthen, extend, deliver (blows) < VL *°allongāre,* for LL *ēlongāre* to ELONGATE]
—**Syn. 2.** rush, charge, lurch.

lunge² (lunj), *n., v.,* **lunged, lung•ing.** longe. [var. of *longe* < F; see LONGE, LUNE²]

lun•gee (lôông′gē, lôôn′jē), *n.* lungi.

lun•geous (lun′jəs), *adj. Brit. Dial.* (of a person) violent; rough. [1675–85; LUNGE¹ + -OUS]

lung•er¹ (lung′ər), *n. Informal.* a person who has chronic lung disease, esp. tuberculosis. [1890–95; LUNG + -ER¹]

lung•er² (lun′jər), *n.* a person or thing that lunges. [1835–45; LUNGE¹ + -ER¹]

lung•fish (lung′fish′), *n., pl.* (*esp. collectively*) **-fish,** (*esp. referring to two or more kinds or species*) **-fish•es.** any of various slender, air-breathing fishes of the order (or subclass) Dipnoi, of rivers and lakes in Africa, South America, and Australia, having a lunglike air bladder as well as gills and growing to a length of 3 to 6 ft. (0.9 to 1.8 m). [1880–85; LUNG + FISH]

lung′ fluke′, any of various trematodes, as *Paragonimus westermani,* parasitic in the lungs of humans and other mammals. [1895–1900]

lun•gi (lôông′gē, lôôn′jē), *n.* **1.** a cloth used as a turban, scarf, sarong, etc., in India, Pakistan, and Burma. **2.** a loincloth worn by men in India. Also, **lungee, lungyi, longyi.** [1625–35; < Hindi *lungī* < Pers]

Lung•ki (lôông′kē′), *n. Older Spelling.* Longxi.

lung•worm (lung′wûrm′), *n.* **1.** any nematode worm of the superfamily Metastrongylidae, parasitic in the lungs of various mammals. **2.** a nematode worm of the genus *Rhabdias,* parasitic in the lungs of reptiles and amphibians. [1880–85; LUNG + WORM]

lung•wort (lung′wûrt′, -wôrt′), *n.* **1.** a European plant, *Pulmonaria officinalis,* of the borage family, having blue flowers. **2.** any of various related plants of the genus *Mertensia,* as the North American *M. virginica,* having nodding clusters of blue flowers. [bef. 1000; ME *long-wort, lung-wort* hellebore, OE *lungen-wyrt;* see LUNG, WORT²]

lun•gyi (lôông′gē, lôôn′jē), *n., pl.* **-gyis.** lungi.

luni-, a combining form meaning "moon," used in the formation of compound words: *lunitidal.* [comb. form repr. L *lūna* moon; see -I-]

lu•ni•so•lar (lōō′ni sō′lər), *adj.* pertaining to or based upon the relations or joint action of the moon and the sun. [1685–95; LUNI- + SOLAR¹]

luniso′lar preces′sion, *Astron.* the principal component of the precession of the equinoxes, produced by the gravitational attraction of the sun and the moon on the equatorial bulge of the earth.

lu•ni•tid•al (lōō′ni tid′l), *adj.* pertaining to the part of the tidal movement dependent upon the moon. [1850–55; LUNI- + TIDAL]

lu′nitid′al in′terval, the period of time between the moon's transit and the next high lunar tide. [1850–55]

lun•ker (lung′kər), *n.* **1.** something unusually large for its kind. **2.** *Angling.* a very large game fish, esp. a bass. [1910–15; *lunk-* (see LUNKHEAD) + -ER¹]

lunk•head (lungk′hed′), *n. Slang.* a dull or stupid person; blockhead. Also called **lunk** (lungk). [1850–55, *Amer.*; *lunk* (perh. b. LUMP¹ and HUNK) + HEAD] —**lunk′head′ed,** *adj.*

lunt (lunt, lôônt), Scot. —*n.* **1.** a match; the flame used to light a fire. **2.** smoke or steam, esp. smoke from a tobacco pipe. —*v.i.* **3.** to emit smoke or steam. **4.** to smoke a pipe. —*v.t.* **5.** to kindle (a fire). **6.** to light (a

shaped like a narrow crescent, as the small the base of the fingernail. Also, **lu•nule** [1565–75; < L *lūnula,* equiv. to *lūn(a)* -ULE]

lu•nu•lar (lōō′nyə lər), *adj.* crescent-sha *markings.* [1560–70; LUNUL(A) + -AR¹]

lu•nu•late (lōō′nyə lāt′), *adj.* **1.** having b ings. **2.** crescent-shaped. Also, **lu′nu•lat′e** LUNUL(A) + -ATE¹]

lun•y (lōō′nē), *adj.*, **lun•i•er, lun•i•est,** *n.* loony.

Lu•o (lōō ō′, lōō′ō), *n., pl.* **Lu•os,** (*esp. coll* for 1. **1.** a member of a people living mai west Kenya. **2.** the Nilotic language of th

Lu•or•a•vet•lan (lōō ôr′ə vet′lən, lwôr′- tian. Also, **Lu•or•a•wet•lan** (lōō ôr′ə wet [< Chukchi *lej°oravetl°en* a self-designa mean lit. "proper person" (or < a cognate K see -AN]

Luo•yang (lwô′yäng′), *n. Pinyin.* a city province, in E China. 750,000. Also, **Loyan Henan.**

lu•pa•nar (lōō pā′nər, -pă′-), *n.* a bro house. [1860–65; < L *lupānar,* deriv. of *lu* lit., she-wolf]

Lu•pe (lōō′pā); *n.* a female given name.

Lu•per•ca•li•a (lōō′per kā′lē ə, -kāl′yə), **-li•es.** a festival held in ancient Rome on February to promote fertility and ward off

Lu•per•cus (lōō pûr′kəs), *n.* an ancient I ity god, often identified with Faunus or Pa

lu•pine¹ (lōō′pin), *n.* any of numerous pla to the genus *Lupinus,* of the legume family **(white lupine),** of Europe, bearing edible *perennis,* of the eastern U.S., having tall, d of blue, pink, or white flowers. [1350–14 *lupinus, lupinum,* appar. n. use of *lupinus* *wolfsbohne* lupine, lit., wolf bean]

lu•pine² (lōō′pīn), *adj.* **1.** pertaining to o the wolf. **2.** related to the wolf. **3.** savag predatory. [1650–60; < L *lupīnus* of a w *lup(us)* wolf + *-īnus* -INE¹]

lu•po•ma (lōō pō′mə), *n. Pathol.* any of occurring in lupus vulgaris. [< NL; see LU

lu•pu•lin (lōō′pyə lin), *n.* the glandular hop, *Humulus lupulus,* formerly used in m sedative. [1820–30; < NL *lupul(us)* (dim. o hop plant; see -ULE) + -IN²]

lu•pus (lōō′pəs), *n. Pathol.* **1.** See **lupus** See **systemic lupus erythematosus.** [18 special use of L *lupus* wolf] —**lu′pous,** *adj*

Lu•pus (lōō′pəs), *n., gen.* **-pi** (-pī). *Astron.* southern constellation between Centaurus [< L]

lu′pus er•y•the•ma•to′sus (er′ə thə -them′ə-), *Pathol.* any of several autoimmu esp. systemic lupus erythematosus, characte scaly skin patches. [1855–60; < NL: e lupus]

lu′pus vul•ga′ris (vul gâr′əs), *Pathol.* a tuberculosis of the skin, characterized by br ercles that often heal slowly and leave scars **lupus.** [1855–60; < NL: common lupus]

Lu•ray (lōō rā′), *n.* a town in N Virginia: s Caverns. 3584.

Lur•çat (lyr sa′), *n.* **Jean** (zhän), 1892–1 painter and tapestry designer.

lurch¹ (lûrch), *n.* **1.** an act or instance abruptly. **2.** a sudden tip or roll to one side, or a staggering person. **3.** an awkward, staggering motion or gait. —*v.i.* **4.** (of a shi pitch suddenly. **5.** to make a lurch; move w stagger: *The wounded man lurched across* [1760–70; orig. uncert.] —**lurch′ing•ly,** *adv.* —**Syn. 5.** lunge, reel, totter.

lurch² (lûrch), *n.* **1.** a situation at the close games in which the loser scores nothing or is the opponent. **2. leave in the lurch,** to leav comfortable or desperate situation; desert trouble: *Our best salesperson left us in the l peak of the busy season.* [1525–35; < MF game, n. use of *lourche* (adj.) discomfited MHG *lurz* left (hand), OE *belyrtan* to deceiv

lurch³ (lûrch), *v.t.* **1.** *Archaic.* to do out cheat. **2.** *Obs.* to acquire through underhan steal; filch. —*v.i.* **3.** *Brit. Dial.* to lurk ne prowl. —*n.* **4.** *Archaic.* the act of lurking watchfulness. [1375–1425; late ME *lorchen,* of *lurken* to LURK]

lurch•er (lûr′chər), *n.* **1.** a crossbred dog u poachers. **2.** *Archaic.* a person who lurks or thief or poacher. [1350–1400; ME; see LURCH

lur•dan (lûr′dn), *Archaic.* —*n.* **1.** a lazy, s ish fellow. —*adj.* **2.** lazy; stupid; worthless. ME < MF *lourdin* dullard, equiv. to *lourd* (< VL *°lurdus,* for L *lūridus* LURID) + -in -INE¹]

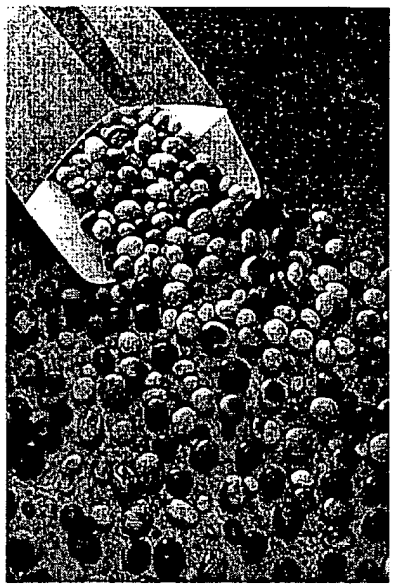
CONCISE PRONUNCIATION KEY: act, cāpe, dâre, pärt; set, ōx, ōver, ôrder, oil, bŏŏk, bōōt, out; up, ûrge; child; sing that; zh as in *treasure.* ə = *a* as in *alone,* e as in *sy easily,* o as in *gallop,* u as in *circus;* ° as in *fire* (fī°r), l and n can serve as syllabic consonants, as in *cradle* *button* (but′n). See the full key inside the front cover.

EXHIBIT C

Legume

From Wikipedia, the free encyclopedia

In botanical writing a **legume** is a plant in the family Fabaceae (or Leguminosae), or a fruit of these specific plants. A 'legume' fruit is a simple dry fruit that develops from a simple carpel and usually dehisces (opens along a seam) on two sides. A common name for this type of fruit is a "pod", although pod is also applied to a few other fruit types, such as vanilla. Well-known legumes include alfalfa, clover, peas, beans, lentils, lupins, mesquite, carob, soy, and peanuts.



Varieties of soybean seeds, a popular legume

Contents

History

The term legume is derived from the Latin word *legumen* (with the same meaning as the English term), which is in turn believed to come from the verb *legere* "to gather." English borrowed the term from the French "légume," which, however, has a wider meaning in the modern language and refers to any kind of vegetable; the English word legume being translated in French by the word légumineuse.

Pea pods

The history of legumes is tied in closely with that of human civilization, appearing early in Asia, the Americas (the common *Phaseolus* bean in several varieties), and Europe (broad beans) by 6,000 BC, where they became a staple, essential for supplementing protein where there was not enough meat.

Fixation of nitrogen in the soil

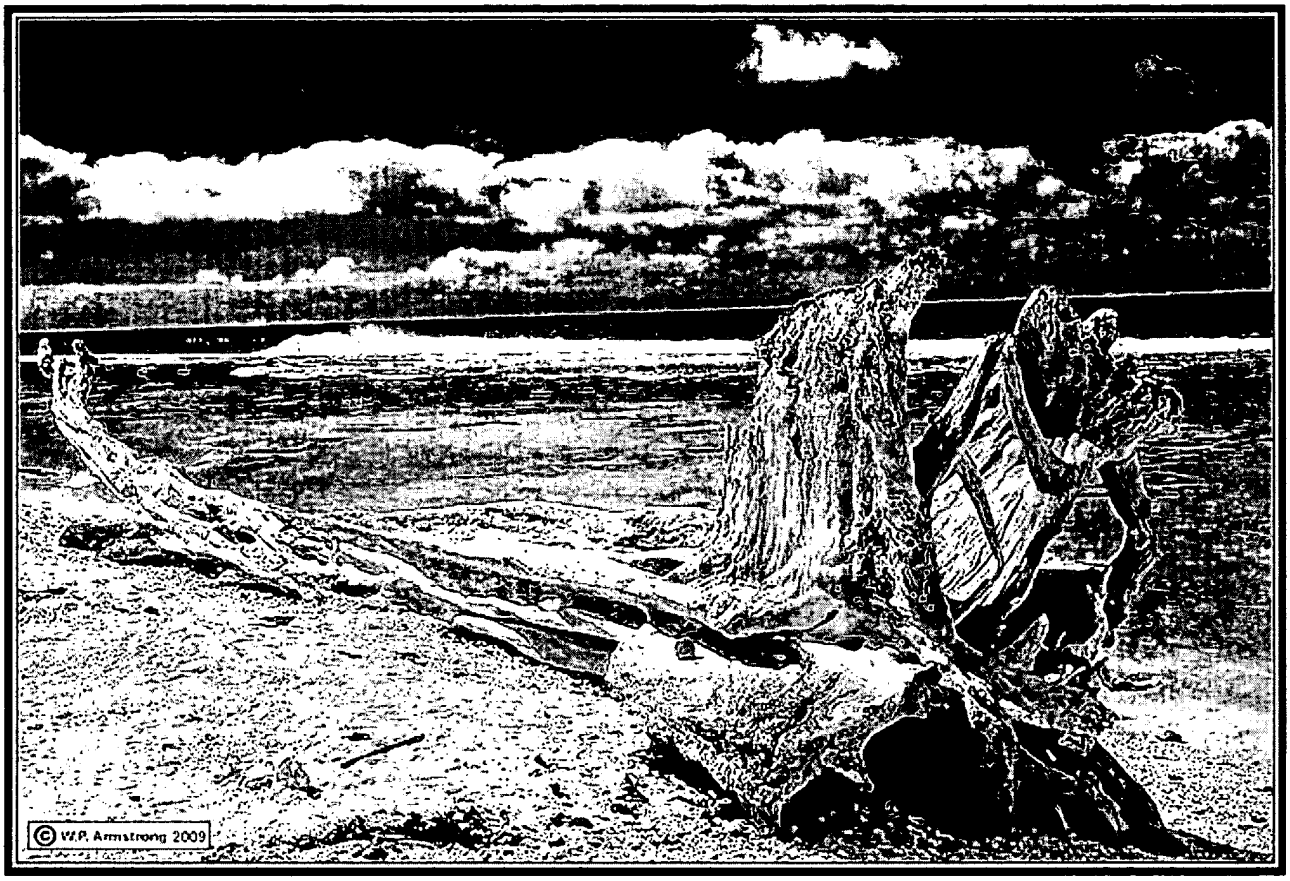
Legume plants are notable for their ability to fix atmospheric nitrogen, thanks to a symbiotic relationship with certain bacteria known as rhizobia found in root nodules of these plants. The ability to form this symbiosis reduces fertilizer costs for farmers and gardeners who grow legumes, and allows legumes to be used in a crop rotation to replenish soil that has been depleted of nitrogen. The nitrogen fixation ability of legumes is enhanced by the availability of calcium in the soil and reduced by the presence of ample nitrogen.

Legume seed and foliage have a comparatively higher protein content than non-legume material, probably due to the additional nitrogen that legumes receive through nitrogen-fixation symbiosis. This high protein content makes them desirable crops in agriculture.

EXHIBIT D

Legume Family (Fabaceae)

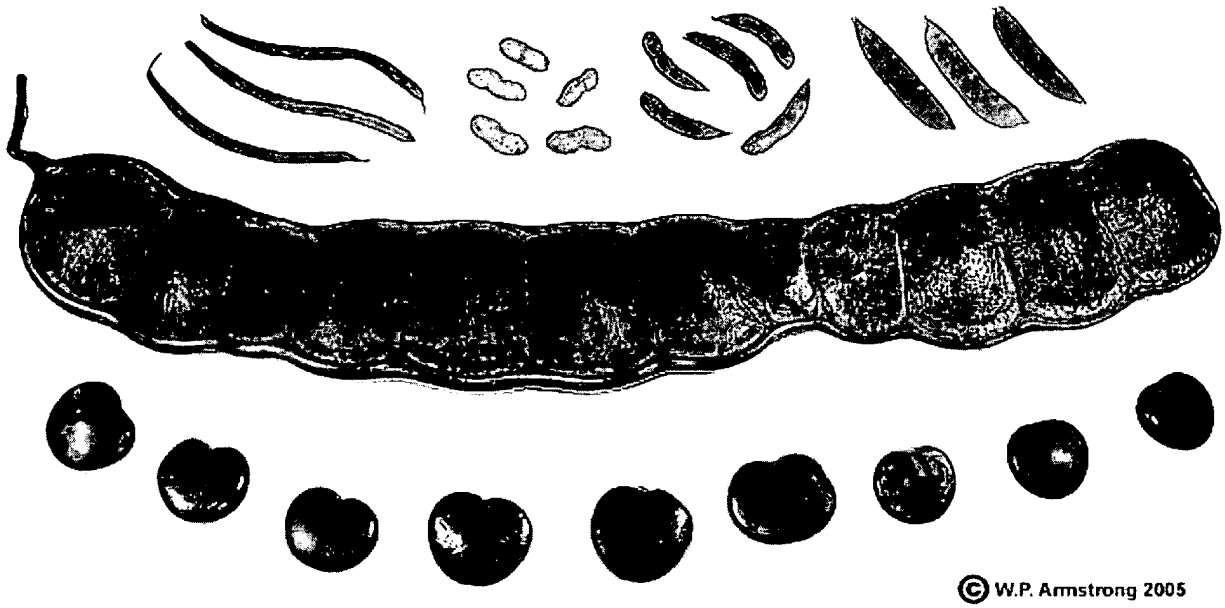
Third Largest Plant Family On Earth



A sun-bleached "mape" or Tahitian chestnut (**Inocarpus fagiferus**) washed ashore on the island of Tetiaroa. The specific epithet is also spelled **fagifer**. This tree is widespread in the South Pacific, from Java and Papua New Guinea throughout numerous Melanesian and Polynesian islands. It grows in coastal forests and along the edges of mangrove swamps. The distinctive, massive trunk is buttressed and irregularly fluted. The cooked seeds are an important food source for indigenous people of this large tropical region. The seeds reportedly have a flavor similar to chestnuts. Grated seeds are used for making cakes, breads and puddings.

The legume family (Fabaceae) is the third largest family of flowering plants with more than 18,000 described species. It is surpassed in size only by the orchid family (Orchidaceae) with about 20,000 species and the sunflower family (Asteraceae) with about 24,000 species. The family includes herbs, shrubs, trees and vines distributed throughout

the world, especially the tropical rain forest. The fruit is technically called a legume or pod. It is composed of a single seed-bearing carpel that splits open along two seams. Legume fruits come in an enormous variety of shapes and sizes, including indehiscent pods that do not split open. Of all the legumes, the peanut is especially fascinating because it develops below the ground.



The world's largest legume fruits (bean pods) are produced by the tropical liana **Entada**. The longest pods of the Central American **E. gigas** may be up to 5 feet long (1.5 m). This gigantic woody vine is truly like Jack's fabulous bean stalk. In Costa Rica it is called "monkey ladder" or "escalera de mono." The woody seeds of **E. gigas** are called "sea hearts" and are often washed down streams to the sea where they drift across the ocean to distant continents. Familiar edible legume pods in the background include green beans, peanuts, soybeans and snow peas.

Diversity of Flowering Plants
The World's Longest Bean Pod

The South American tipu tree (**Tipuana tipu**). Unlike the fruits of most members of the legume family, the unusual fruits have a distinctive wing that causes the legume to spin as it falls from the rain forest canopy. The tipu tree is commonly planted as a shade tree along streets in San Diego County. In fact, it lines the major thoroughfares at California State University, San Marcos.

Seeds and Fruits Dispersed By Wind

The peanut (**Arachis hypogaea**) is native to central South America. By the time Columbus reached the New World, peanuts were already cultivated throughout warmer regions of the Americas. Peanuts have been introduced into Africa and Asian countries where they have become an important food crop. Like clover and alfalfa, the peanut root system contains nodules of nitrogen-fixing bacteria that convert inert atmospheric nitrogen into ammonia. Other bacteria convert the ammonia into nitrites and nitrates that enrich the soil with a usable form of nitrogen.

Read About Nitrogen Fixation In Plants

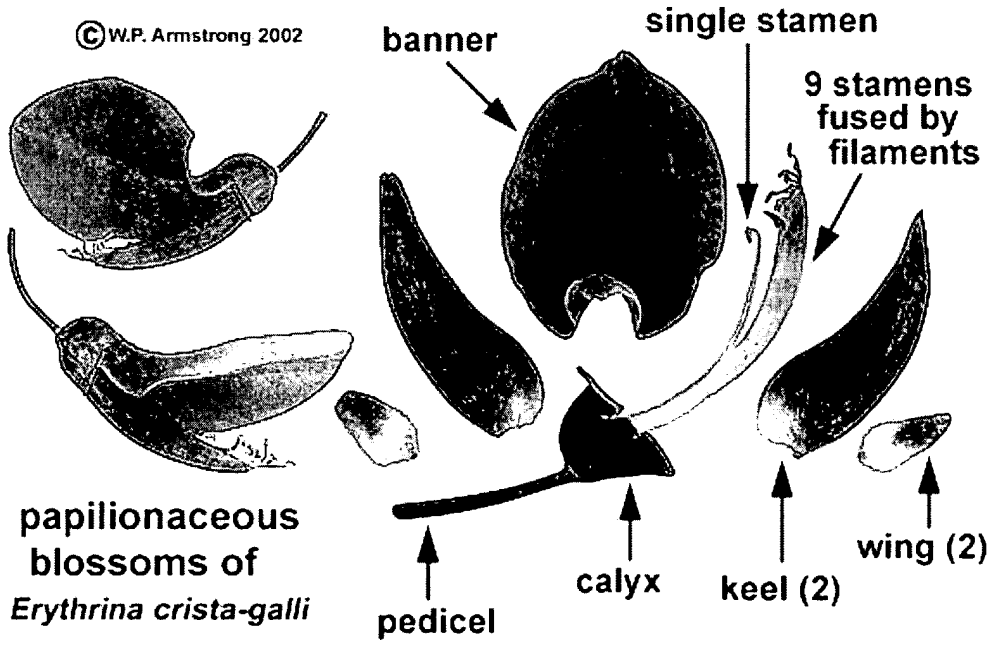
Like other members of the subfamily Papilionoideae, the peanut flower is papilionaceous, typical of a pea blossom. The peanut flower is produced on a slender stalk (pedicel) near the base of the plant. Each flower consists of five petals: a large banner, two lateral wings, and a keel formed by two fused petals. The keel petals enclose the 9 stamens (androecium) and pistil (gynoecium).

More Information & Images About Peanuts

Three Subfamilies of the Legume Family

1. Family Fabaceae--Subfamily Papilionoideae:

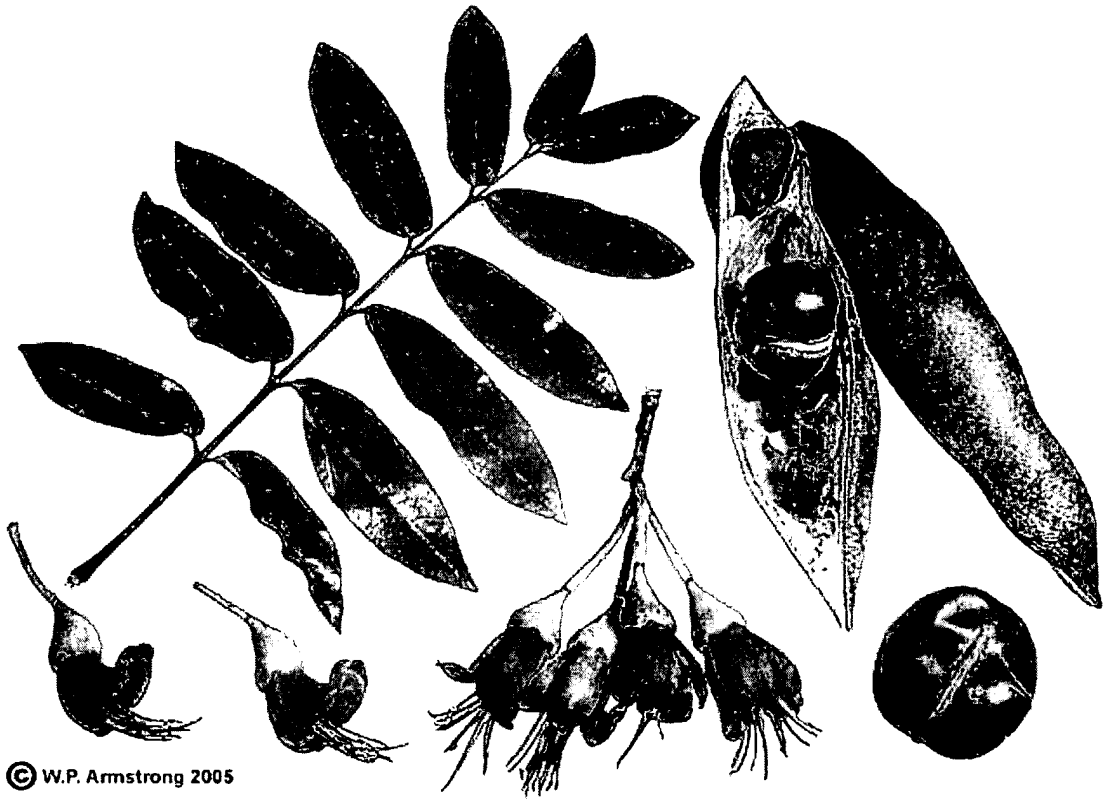
Members of the subfamily Papilionoideae have true papilionaceous flowers in which the upper petal is outside the lateral petals in the bud. This subfamily includes most members of the Fabaceae with typical pea-like flowrs, including **Dalea** (smoke tree), **Lupinus** (lupine), **Lathyrus** (sweet pea), **Erythrina** (coral tree), **Robinia** (black locust) and **Astragalus** (locoweed).



A dissected papilionaceous flower of **Erythrina crista-galli** showing all the major perianth segments removed from their attachment inside the calyx. The

five petals consist of one large, oval banner or standard, two elongate keel petals that are fused together enclosing the stamens, and two reduced wings. Nine stamen filaments are united into a sheath that surrounds the pistil. One stamen filament is separate from the fused nine, a condition referred to as diadelphous. A drop of nectar is secreted at the base of the petals inside the calyx. At maturity the banner is widely separated from the keel petals, thus making the nectar fluid at the base of the petals (within the calyx) readily available to short-billed perching birds. **Erythrina** species pollinated by hummingbirds have elongate, tubular blossoms.

See The Dissected Flower Of A Peanut
The Pollination & Dispersal Of Coral Trees



Moreton Bay chestnut (**Castanospermum australe**), a beautiful rain forest tree native to northeastern Australia and New Caledonia.

Moreton Bay chestnut (**Castanospermum australe**), an Australian rain forest tree.

Developing pod of Moreton Bay chestnut (**Castanospermum australe**)

Immature pods of the Moreton Bay chestnut (**Castanospermum australe**).

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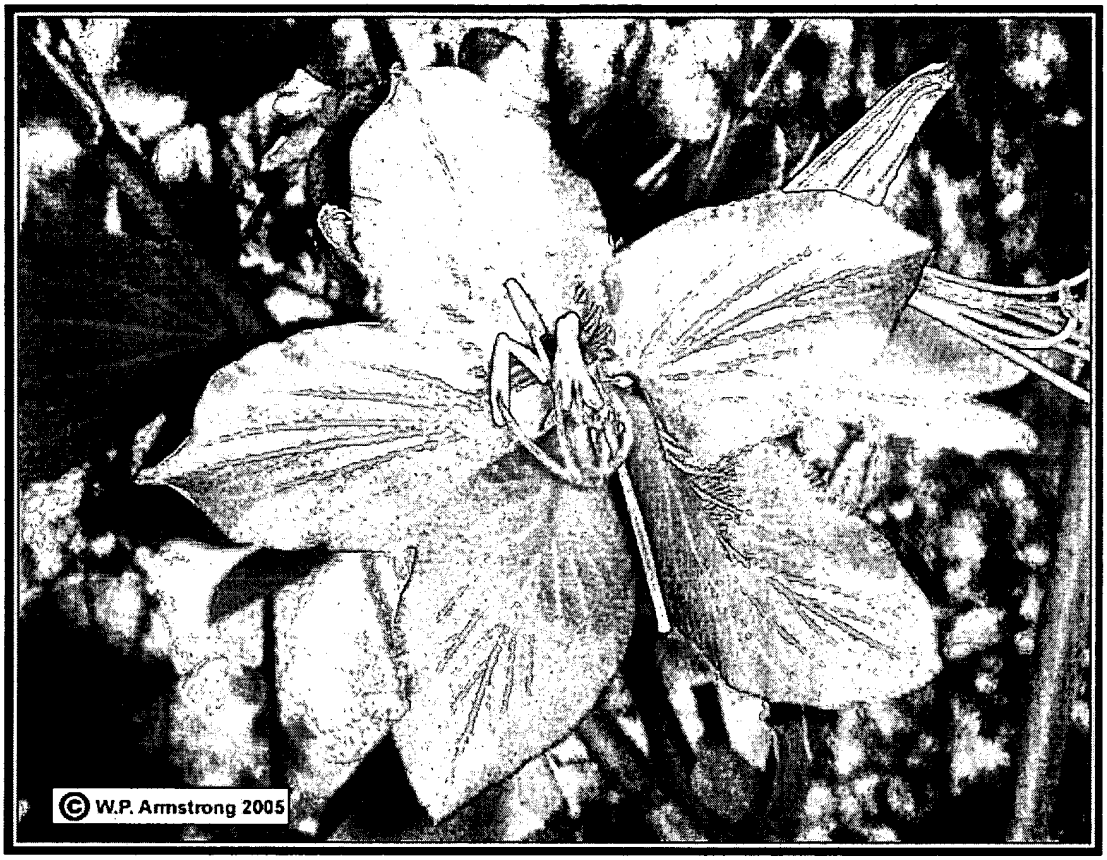
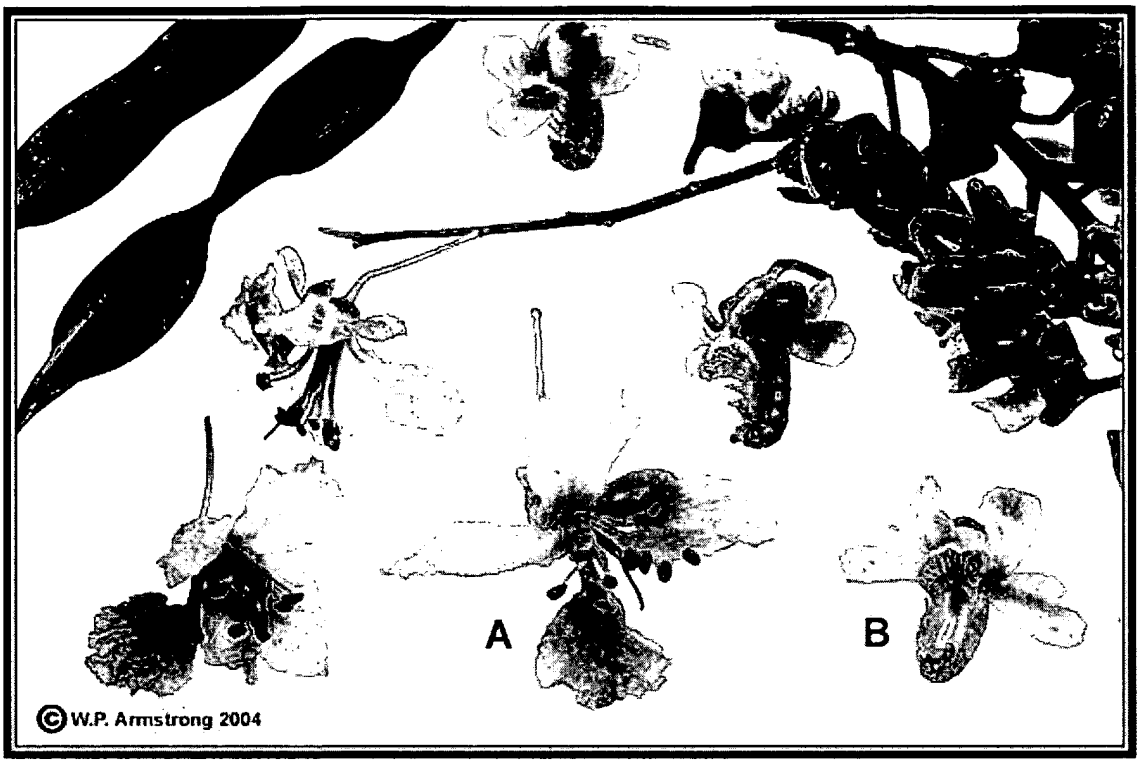
2. Family Fabaceae--Subfamily Caesalpinioideae:

Members of the subfamily Caesalpinioideae have flowers that are bilateral, typically with five distinct petals, upper petal (banner) enveloped in the bud by the lateral wings. This subfamily includes **Cassia** (senna), **Cercis** (redbud), **Bauhinia** (orchid tree), **Cercidium** (palo verde), **Parkinsonia** (Jerusalem thorn), **Caesalpinia** (brazilwood), **Haematoxylum** (logwood), **Ceratonia** (carob), **Tamarindus** (tamarind) and **Delonix** (royal poinciana).



The Hong Kong orchid tree (**Bauhinia blakeana**) native to souhern China. Although it is truly a legume, the flower is not papilionaceous. The upper petal is enveloped in the bud by the lateral wings.

Bauhinia galpinii, a shrubby species native to South Africa. The beautiful blossoms are brick red to orange. Although it is truly a legume, the flower is not papilionaceous. The upper petal is enveloped in the bud by the lateral wings.



A. Jerusalem thorn or Mexican palo verde (**Parkinsonia aculeata**), a tree native to deserts of Arizona and Baja California. B. Brazilwood (**Caesalpinia echinata**), a tree native to Brazil and one of the important dyewoods of the 1600s. The flowers are bilateral (irregular) but not truly papilionaceous.

See Logwood and Brazilwood

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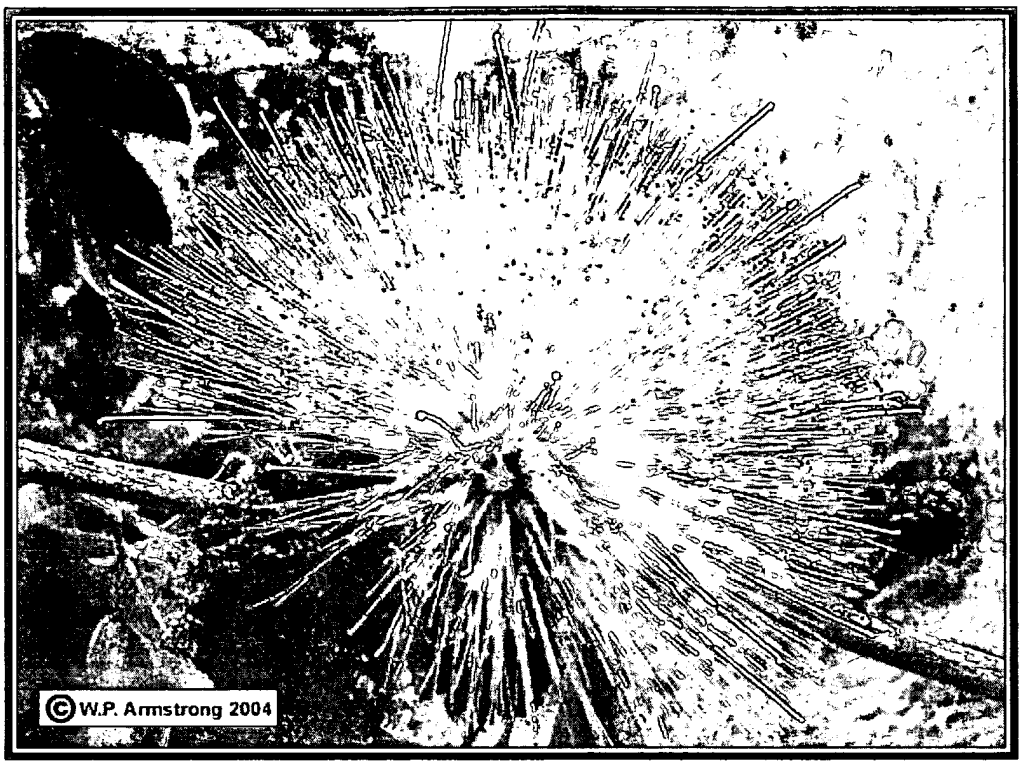
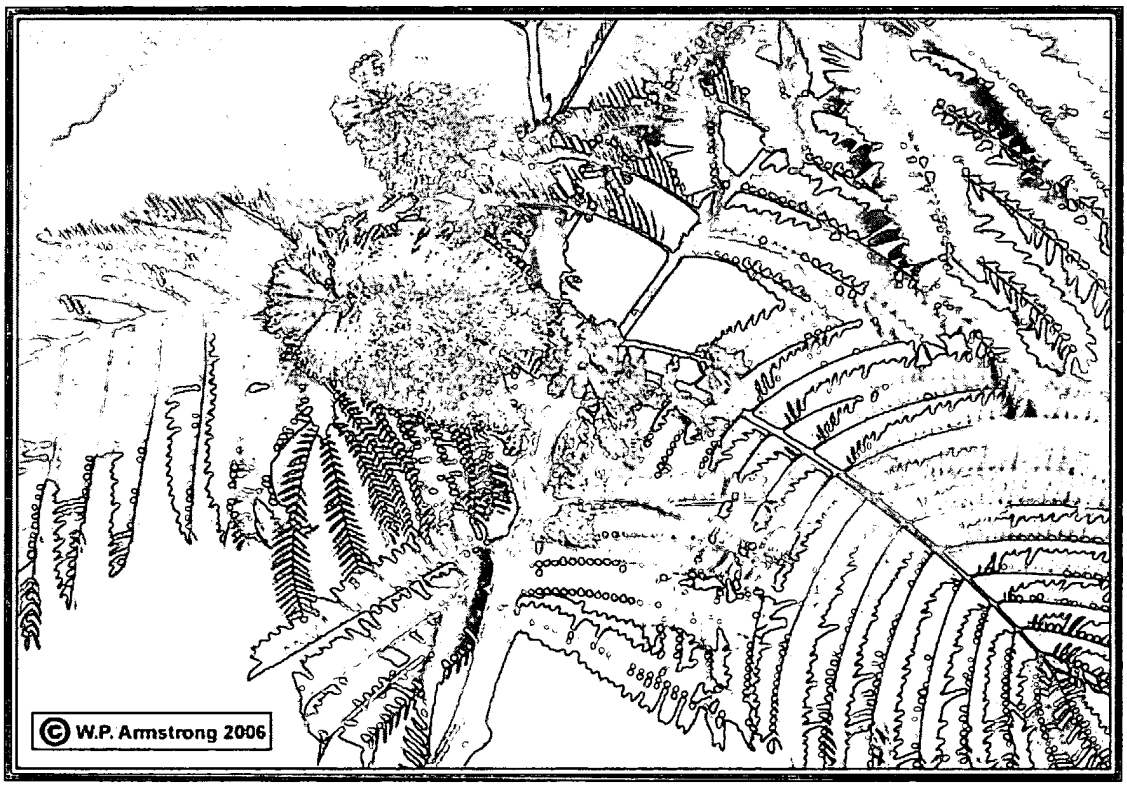
3. Family Fabaceae--Subfamily Mimosoideae:

Members of the subfamily Mimosoideae have flowers with radial symmetry, small, inconspicuous corollas and numerous, showy stamens. The flowers are typically in many-flowered heads or spikes. This subfamily includes **Acacia (wattle)**, **Albizia** (silk tree), **Samanea** (monkeypod), **Prosopis** (mesquite) and **Calliandra** (powder puff).



Red powder puff (**Calliandra haematocephala**) native to Bolivia.



Plume albizia (**Albizia distachya**) native to Australia.

 Go To The Diversity Of Flowering Plants

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EXHIBIT E

Samen der Hülsenfrüchtler fast weltweit ein wichtiger Bestandteil der menschlichen Ernährung. Insbesondere bei fleischarmer oder vegetarischer Kost sind sie fast unverzichtbar. Beispiele sind etwa Erbsen, Kichererbsen, Bohnen, Azukibohnen, Limabohnen und Linsen, die zur Unterfamilie der Schmetterlingsblütler (Faboideae) gehören. Oft werden nur die Samen gegessen und umgangssprachlich werden dann die Samen - pars pro toto - meist „Hülsenfrüchte" genannt. Bei beispielsweise grünen Bohnen und Zuckererbsen werden die Früchte gegessen. Einige Hülsenfrüchte können auch roh gegessen werden (zum Beispiel Zuckererbsen), viele sind im rohen Zustand aber gesundheitsschädlich und müssen vor dem Verzehr unbedingt eingeweicht und vollständig durchgegart werden.

Die für die Ernährung wichtigsten Hülsenfrüchte mit ihrer mittleren chemischen Zusammensetzung von Nährstoffen (in Prozent).

Fruchtart	Wasser	Proteine	Fette	Kohlenhydrate
Bohnen (grün)	82–90	2,5–6	0,3	6,5–8,5
Bohnen (reif)	11–14	24–26	1,5–2	47–55
Erbsen (grün)	80	2,5–6,5	0,5	4–12,5
Erbsen (reif)	14	23	2	53
Kichererbsen		20,5	4,8	61
Linsen	12	26	2	53
Sojabohnen	10	34	19	27
Erdnüsse	2	24	50	22
Lupinen	15	38	4	25

Hülsenfrüchte enthalten neben den Eiweißen außerdem Kohlenhydrate, unter denen einige Mehrfachzucker die bekannten Blähungen verursachen.

Leguminosen werden auch in der Landwirtschaft verbreitet als Futtermittel für Wiederkäuer und Schweine eingesetzt.

Viele Arten liefern tropische Hölzer (Palisanderholz: *Dalbergia*- und *Machaerium*-Arten, *Sophora*-Arten). Als Forstpflanze in den gemäßigten Zonen angepflanzt wurde die Robinie und ist verwildert. Viele Arten und ihre Sorten werden als Zierpflanzen verwendet.

Die medizinische Wirkung wurde bei vielen Arten untersucht.

Systematik

Die Familie umfasst etwa 730 Gattungen und fast 20.000 Arten. Sie wird in drei Unterfamilien und etwa 45 Tribus gegliedert (Gattungen siehe Unterfamilien):

- Schmetterlingsblütler (Faboideae): Mit etwa 476 Gattungen und etwa 13855 Arten. Sie besitzen die typischen, zygomorphen Schmetterlingsblüten.
  - Abreae
  - Adesmieae
  - Aeschynomeneae
  - Coronilleae
  - Crotalarieae
  - Cytiseae
  - Galegeae
  - Genisteae
  - Hedysareae
  - Phaseoleae
  - Podalyrieae
  - Psoraleeae